

REMARKS

This application has been reviewed in light of the Office Action dated January 28, 2003. Claims 1-7, 16, and 19 are presented for examination. Claims 22-33 were withdrawn, in the Office Action. Claims 1-7, 16, and 19 have been amended to define more clearly what Applicant regards as his invention. Claims 1, 16, and 19 are in independent form. Favorable reconsideration is requested.

A Letter Transmitting Corrected Formal Drawing is submitted herewith, to formally effect the drawing changes approved in the Office Action Summary attached to the Office Action.

Claims 1, 6, 7, 16, and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,732,149 (*Kido et al.*) in view of Applicant's admitted prior art disclosed in the Background of the specification on pages 1-3. Claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kido et al.* in view of Applicant's admitted prior art as applied to claim 1, and further in view of U.S. Patent No. 6,035,064 (*Nakao et al.*). Claims 3 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kido et al.* in view of Applicant's admitted prior art as applied to claim 1, and further in view of U.S. Patent No. 5,680,471 (*Kanebako et al.*). Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of *Kido et al.* and Applicant's admitted prior art as applied to claim 1, and further in view of U.S. Patent No. 6,011,862 (*Doi*)

As shown above, Applicant has amended independent Claims 1, 16, and 19 in terms that more clearly define the present invention. Applicant submits that these amended

independent claims, together with the remaining claims dependent thereon are patentably distinct from the cited prior art for at least the following reasons.

The aspect of the present invention set forth in Claim 1 is a method for setting an area in a radiation image obtained by radiographing an object. The method comprises the steps of deleting a passing through area from the radiation image, preparing a projection of the image obtained in the deleting step, and setting an area in the radiation image based on the projection.

Important features of claim 1 are the steps of deleting a passing through area from the radiation image and preparing a projection of the image obtained in the deleting step.

Kido et al., as understood by Applicant, relates to an irradiation field region extracting apparatus for radiation images. Apparently, *Kido et al.* discloses that a lung field region, which is a concerned region in the bust radiation image, is recognized by using a local maximum and local minimum in the projection of longitudinal and lateral directions, and the gradation processing condition is determined in accordance with the histogram or the accumulated histogram of the image data in the lung field region.

The Office Action, in the Response to Amendment section, characterizes the “extraction of the irradiation field” of *Kido et al.* (Column 1, line 65 to Column 2, line 25) as including “deleting of the other area in the image”. Applicant respectfully disagrees with this characterization of *Kido et al.*, and submits that *Kido et al.* merely discloses that the lung field region, in this example, recognized using the projection of the image data in the irradiation field, is intended as the target of histogram formation. That is, a region surrounded by boundary lines is targeted (extracted) for histogram formation. Moreover, it is apparent from Figures 16 and 17 *Kido et al.* that the irradiation field includes the passing through area (i.e., the area in which X-

rays are directly radiated to the sensor). Therefore, the profile of the projection changes are dependent upon how the passing through area is distributed within the irradiation field. Such a distribution may be changed according to the object to be radiographed, the radiographing condition, and the like.

Furthermore, the Office Action cites *Kido et al.*, column 2, line 1, as disclosing a preparing step of preparing a projection from the image. However, Applicant understands this reference as merely disclosing that a concerned area is recognized using local maximum and local minimum in the projection of longitudinal and lateral directions. Nothing has been found, or pointed out, in *Kido et al.* that would disclose or suggest preparing a projection of the image obtained in the deleting step, as recited in claim 1. As noted above, *Kido et al.* also fails to disclose deleting a passing through area from the radiation image, as recited in claim 1.

Accordingly, claim 1 is patentable over *Kido et al.*, taken alone.

The Office Action alleges that Applicant's prior admitted art discloses that the deleting step was well known. However, the admitted prior art merely discloses the use of a histogram of a remaining area, obtained by deleting a passing through area (an area in which X-rays are directly radiated to the sensor) from the X-ray image, in a method of extracting the characteristic amount. In the admitted prior art, the remaining area is merely intended as the target for histogram formation.

Applicant's admitted prior art, however, does not disclose or suggest preparing the projection of the image obtained in the deleting step, as recited in claim 1.

Accordingly, in *Kido et al.* and the admitted prior art, the lung field region, recognized by using the projection, and the remaining area, obtained by deleting the passing

through area from the X ray image, are merely set as the targets for forming the histogram.

Neither *Kido et al.* nor the admitted prior art is seen to disclose or suggest preparing the projection of the image obtained from deleting the passing through area from the radiation image, as recited in claim 1.

For these reasons, Applicant submits that, even if *Kido et al.* and the admitted prior art were to be combined in the manner proposed in the Office Action, assuming such a combination would even be permissible, the resulting combination still would fail to teach or suggest the foregoing features recited in claim 1.

Accordingly, claim 1 is believed clearly patentable over the art relied on by the Examiner, whether considered separately or in combination.

Independent claims 16 and 19 are apparatus and storage medium claims, respectively, corresponding to method claim 1, and also are believed to be patentable over the art relied on by the Examiner for at least the same reasons as those discussed above in connection with claim 1.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

This Amendment After Final Action is believed clearly to place this application in condition for allowance and, therefore, its entry is believed proper under 37 C.F.R. § 1.116.

Accordingly, entry of this Amendment, as an earnest effort to advance prosecution and reduce the

number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicant's undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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